

Standard 6: Environment and Health

The student will use concepts from science, social studies and health to analyze and interpret both positive and negative impacts of natural events and human activities on human health.

A. Natural Changes and Human Health

1. Identify and describe natural changes in the environment that may affect the health of human populations and individuals.

- a. Describe and explain the internal and external processes of the earth that cause natural hazards and events that change or destroy human and wildlife habitats, damage property and harm or kill humans.
- b. Identify natural hazards as earthquakes, tsunamis, landslides, wildfires, volcanic eruptions, floods, storms.
- c. Identify coastal hazards specific to Maryland.
- d. Cite examples of normal adjustments of the earth that are hazardous to humans.
- e. Cite examples of hazards such as earthquakes, volcanic eruptions and severe weather that are rapid and spectacular, and other hazards, such as stream channel movement, coastal erosion, and sedimentation that are slow and progressive.
- f. Cite examples and evidence to illustrate that natural systems can change to an extent that exceeds the limits of the organisms to adapt naturally or humans to adapt technologically.
- g. Investigate the effects of substances that are found in natural environments (for example radon, lead) that are harmful to humans.
- h. Cite examples of a time when natural hazards presented personal and societal challenges because misidentifying the change or incorrectly estimating the rate and scale of change resulted in either too little attention, resulting in significant human costs, or too much cost for unneeded preventative measures.

B. Human-Induced Changes and Human Health

1. Describe and explain that many changes in the environment designed by humans bring benefits to society as well as cause risks.

- a. Identify risks and benefits that are associated with:
 - natural events
 - chemical elements and compounds (such as toxic substances, pesticides, drugs)
 - biological factors (such as pollen, viruses, parasites, fungi, bacteria)
 - social factors (such as occupational safety and transportation)
 - personal behaviors (such as smoking, dieting, drinking alcohol, some dietary habits)
- b. Analyze evidence that a variety of factors positively or negatively influence the length and quality of human life, such as: diet, genes, availability of medical care, sanitation measures, safe food handling in control the spread of disease, environmental conditions, chemical and radiation exposure, use of antibacterial drugs, contamination through hormone mimics.
- c. Explain how maintaining environmental health involves establishing or monitoring quality standards related to the use of soil, water and air.

C. Hazards and Risk Analysis

1. Analyze and explain that human activities, products, processes, technologies and inventions can involve some level of risk to human health.

- a. Describe and explain the idea that natural and human- induced hazards present the need for humans to assess potential danger and risk.
- b. Recognize and demonstrate that individuals can use a systematic approach to think critically about risks and benefits by applying probability estimates to risks and comparing probabilities to estimated personal and social benefits.
- c. Recognize and explain that risk analysis considers the type of hazard and estimates the number of people that might be exposed and the number likely to suffer consequences and that these results are used to determine the options for reducing or eliminating risks.
- d. Investigate data and cite examples of the costs and trade-offs of various hazards, ranging from minor risk to a few people to major catastrophes with major risks to many people.
- e. Investigate data and cite examples of important personal and social decisions that are made or were previously made based on the perceptions of benefits and risks.